

**PATH 15 UPGRADE PROJECT
NORTH-TO-SOUTH RATING STUDY**

**Appendix 1
Transient Stability Plots**

**WECC Rating Process
Phase 1
Comprehensive Progress Report**



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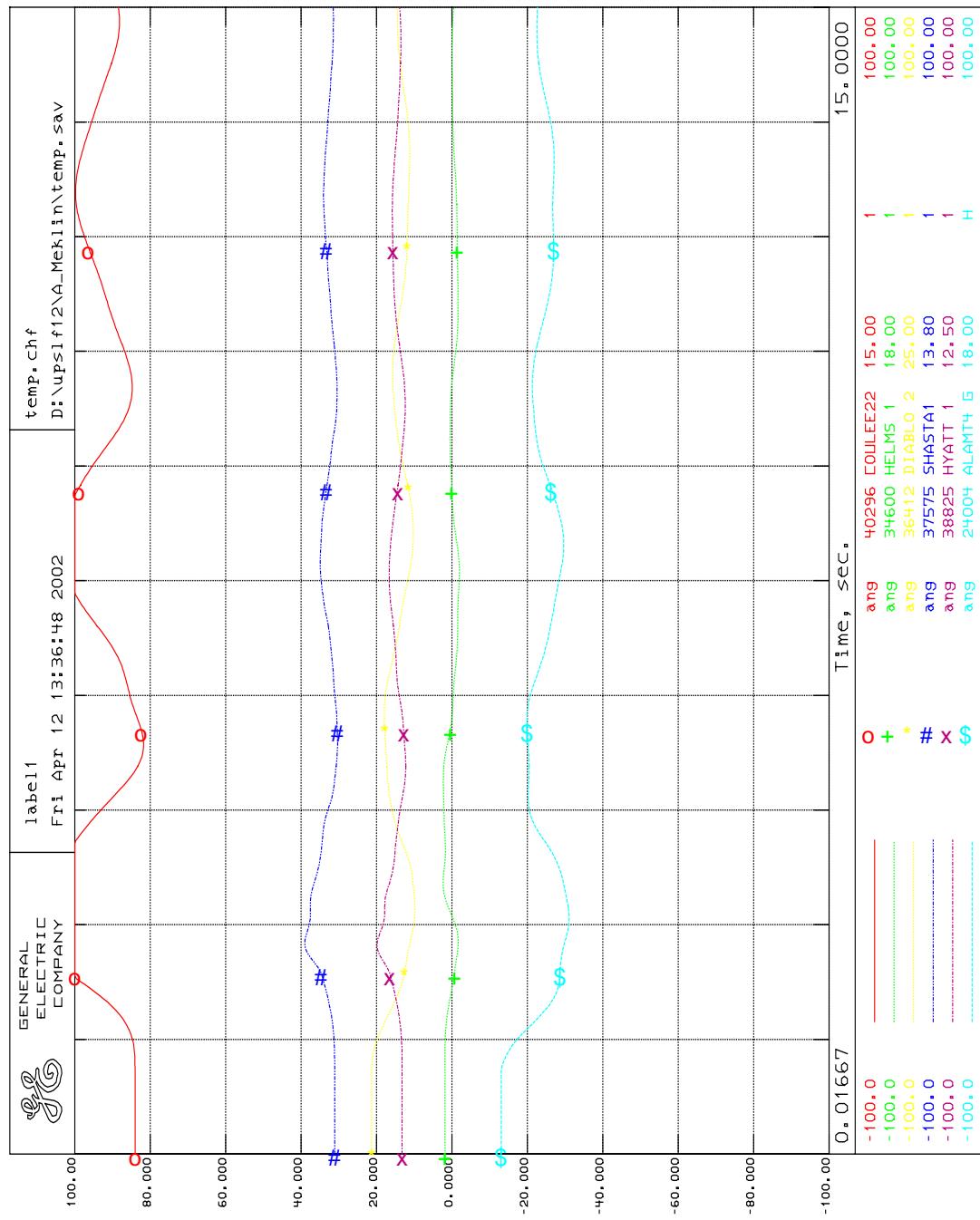


Figure 1. Palo Verde DLO. Pre-project. Angles.

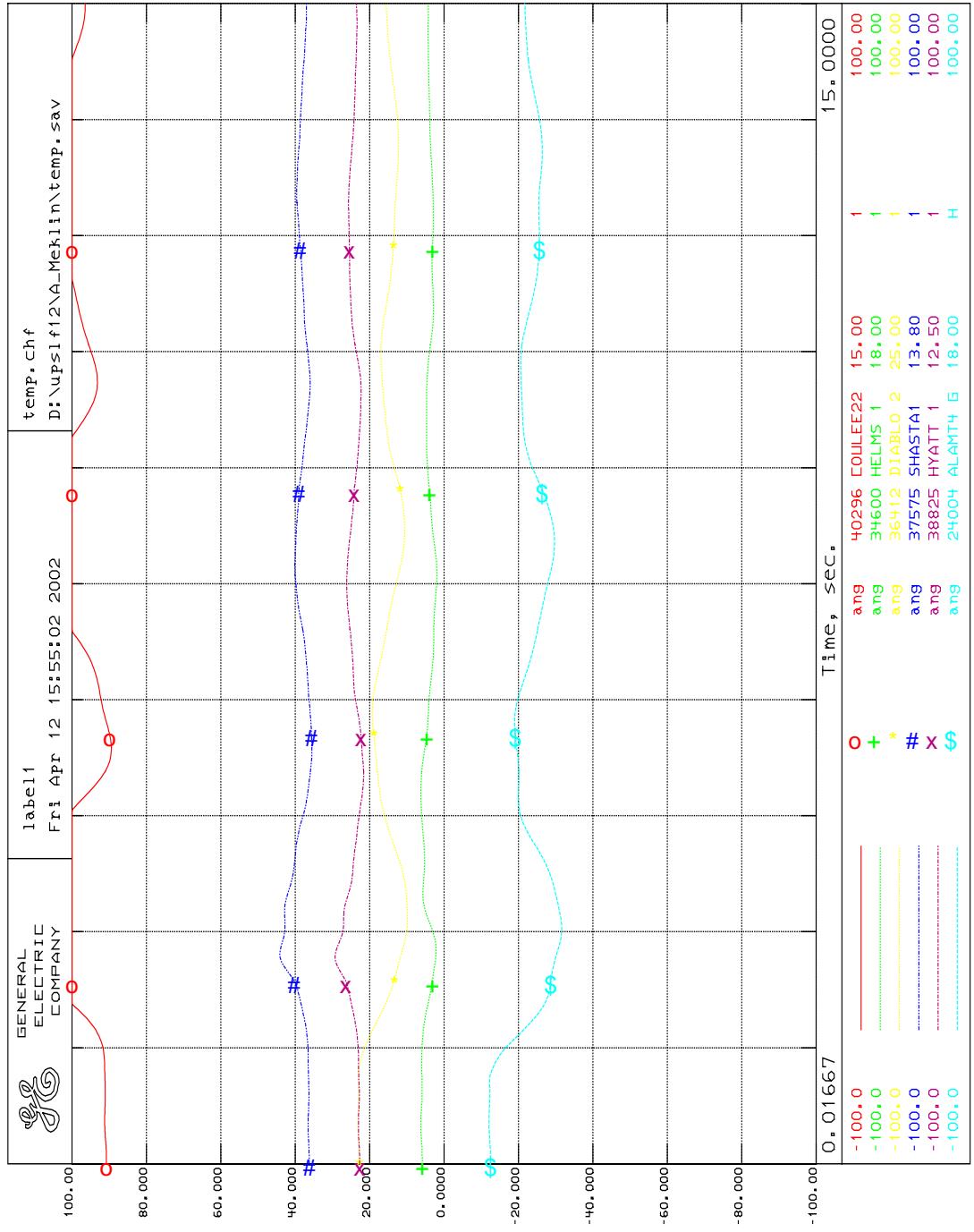


Figure 2. Palo Verde DLO. Post-project. Angles.

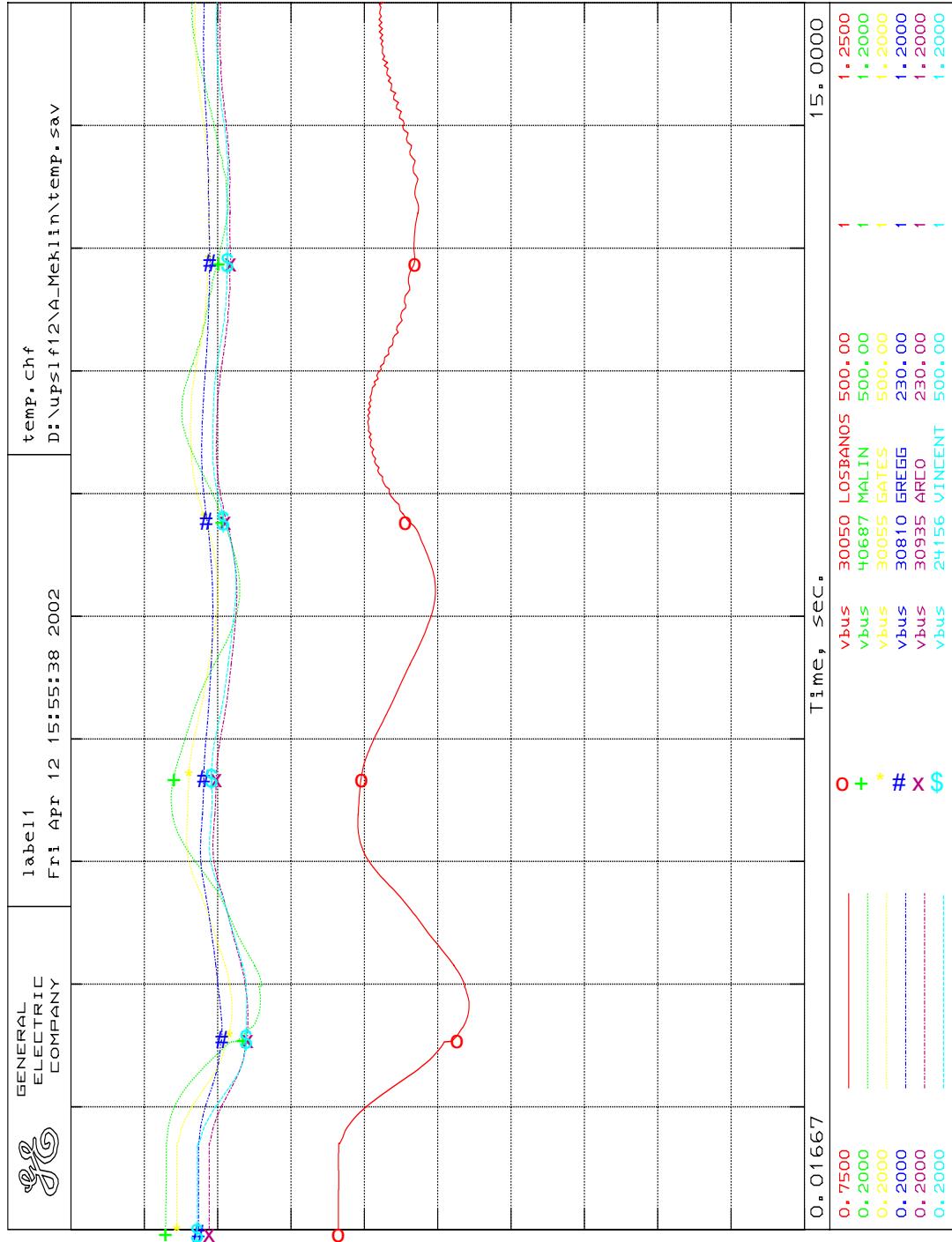
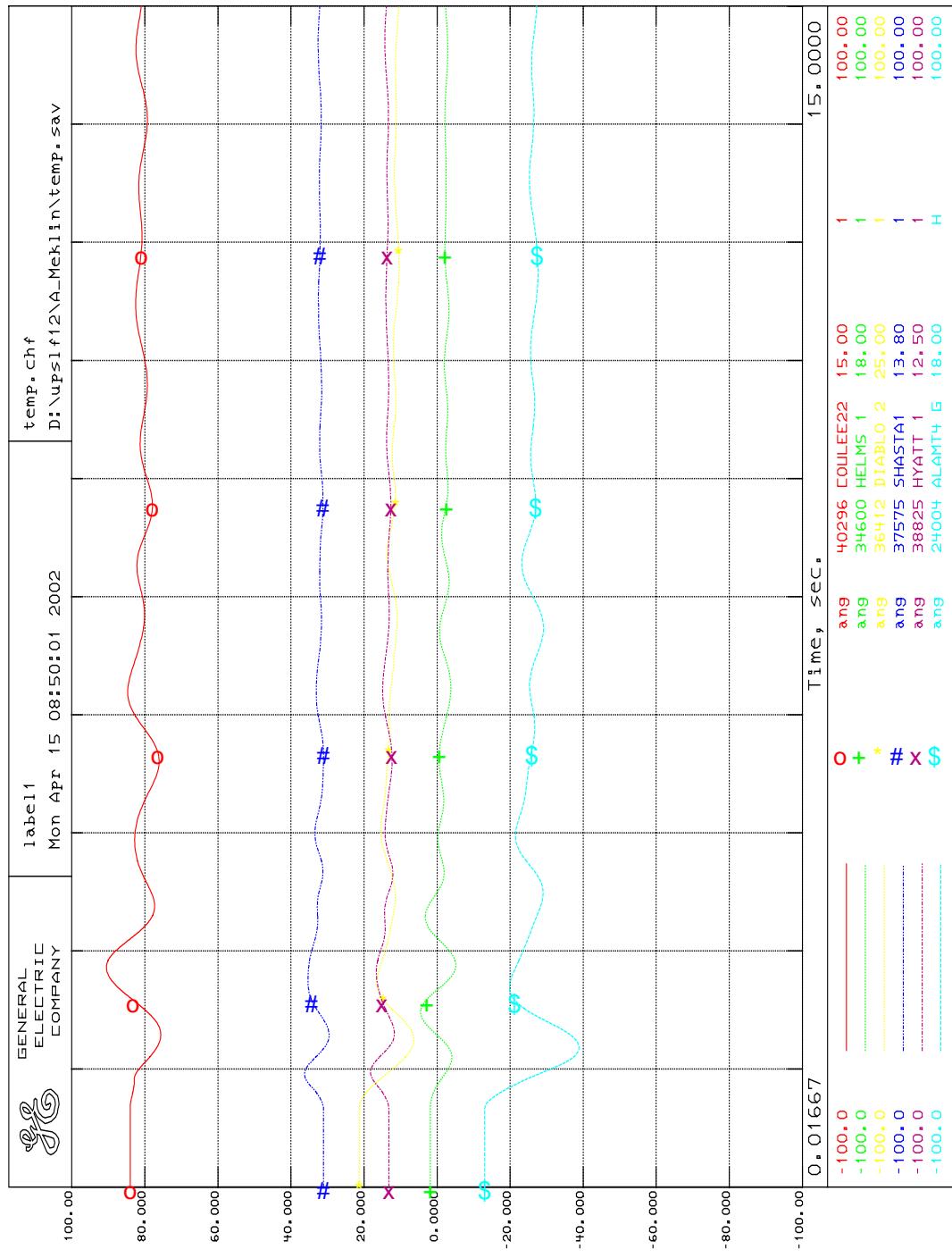


Figure 3. Palo Verde DLO. Post-project. Voltages.



Pre-project, N-to-S, P15=1750, P26=3985
BIPOLE LOSS OF PDCI
NORTH TO SOUTH FLOW

Figure 4. PDCI bi-pole. Pre-project. Angles.

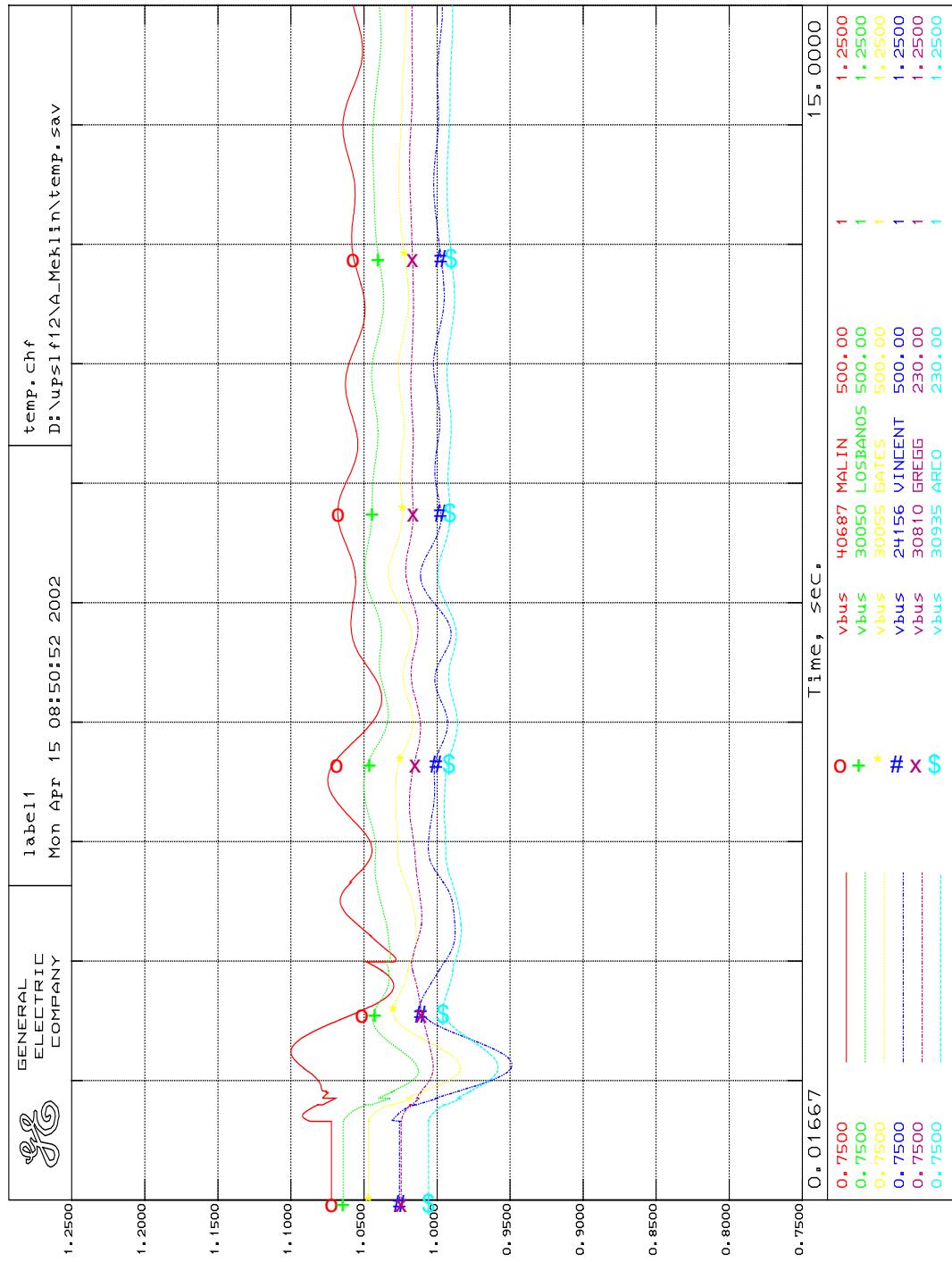


Figure 5. PDCI bi-pole. Pre-project. Voltages.

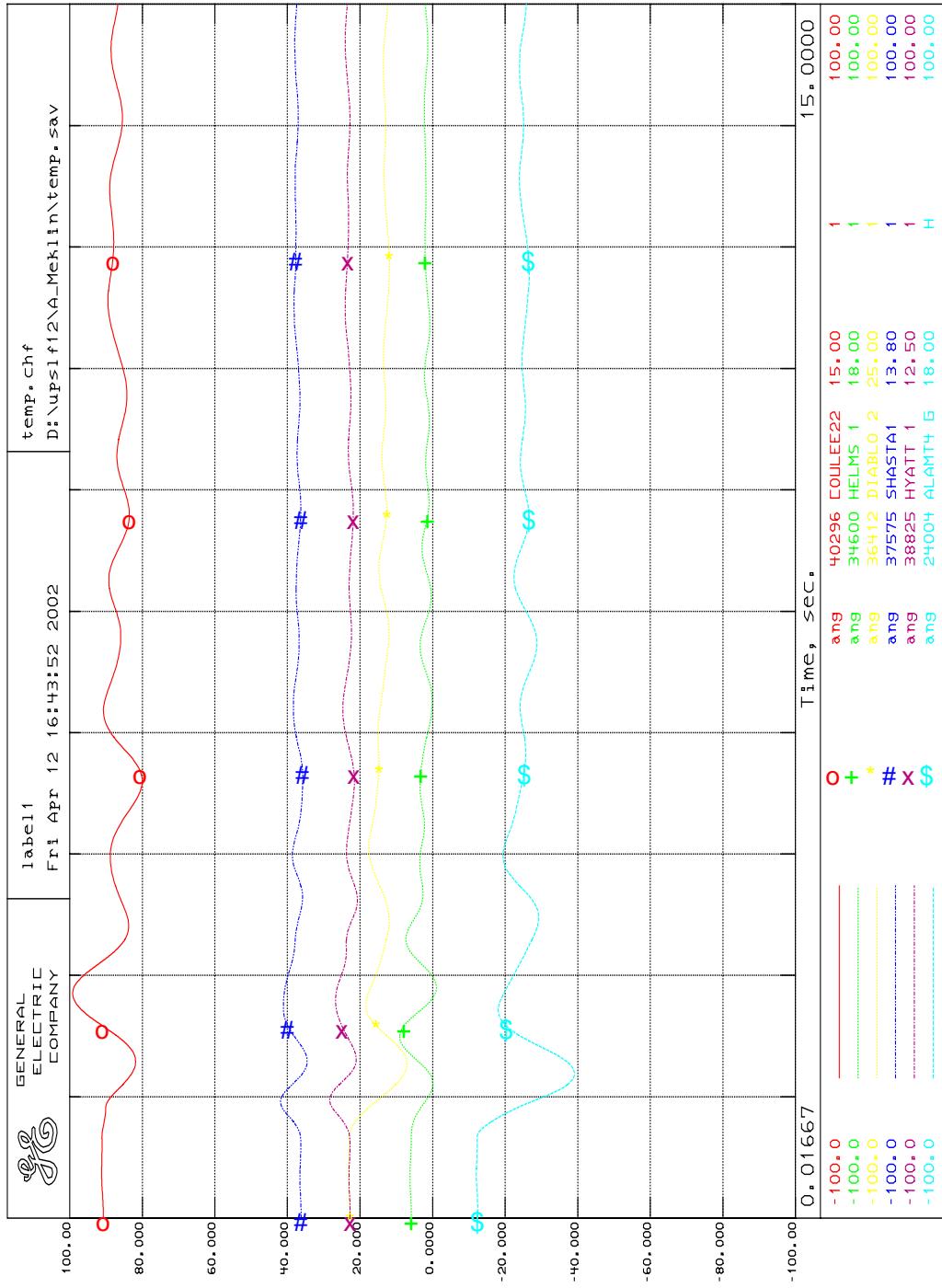


Figure 6. PDCI bi-pole. Post-project. Angles.

Post-project, N-to-S, P15=2710, P26=3985
BIPOLE LOSS OF PDEI

Simulated by switching Cello-Big Eddy 230 and 500 kV lines
(shunt capacitors are moved in the case from Cello to Big Eddy)

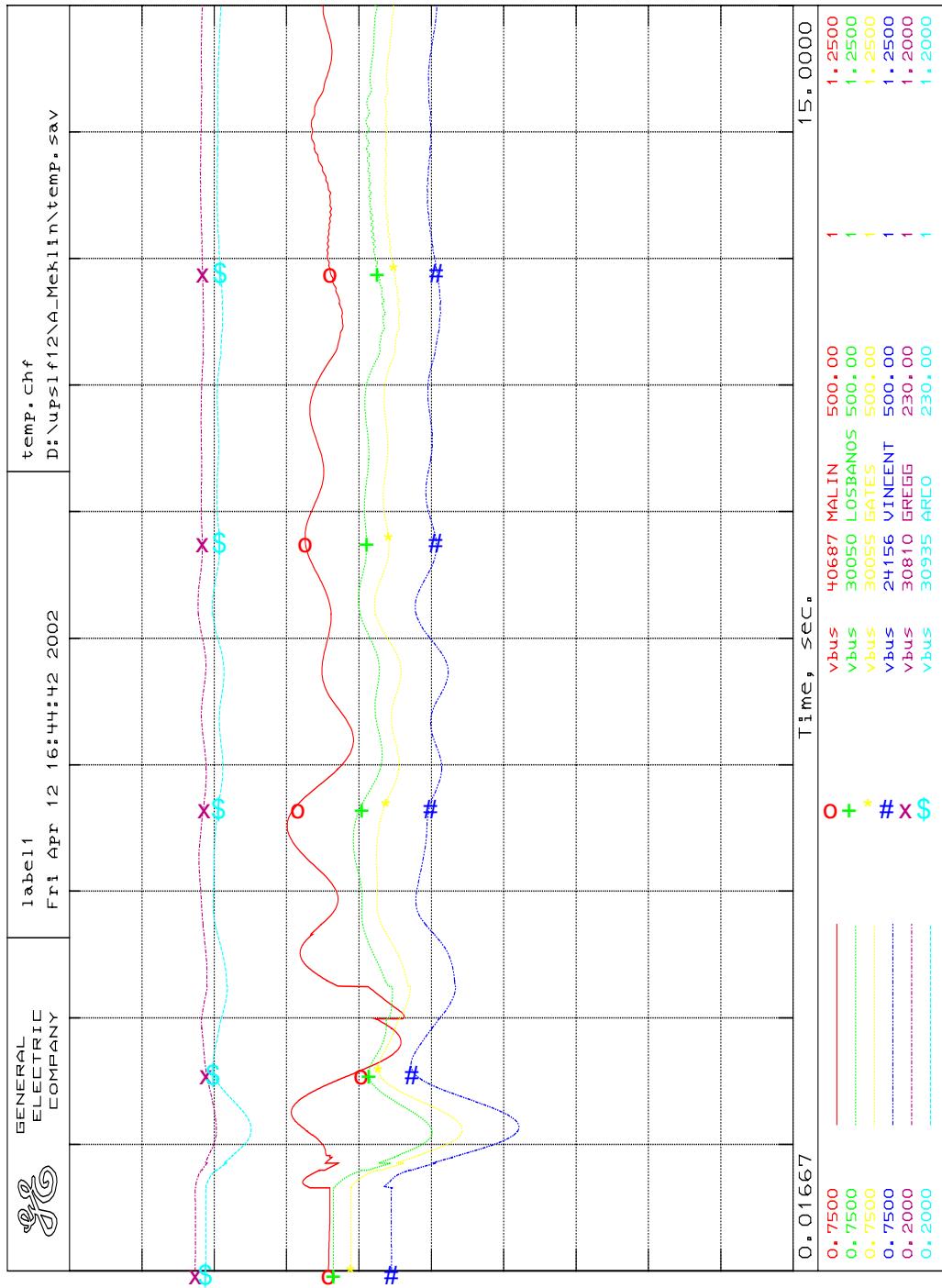


Figure 7. PDCI bi-pole. Post-project. Voltages.

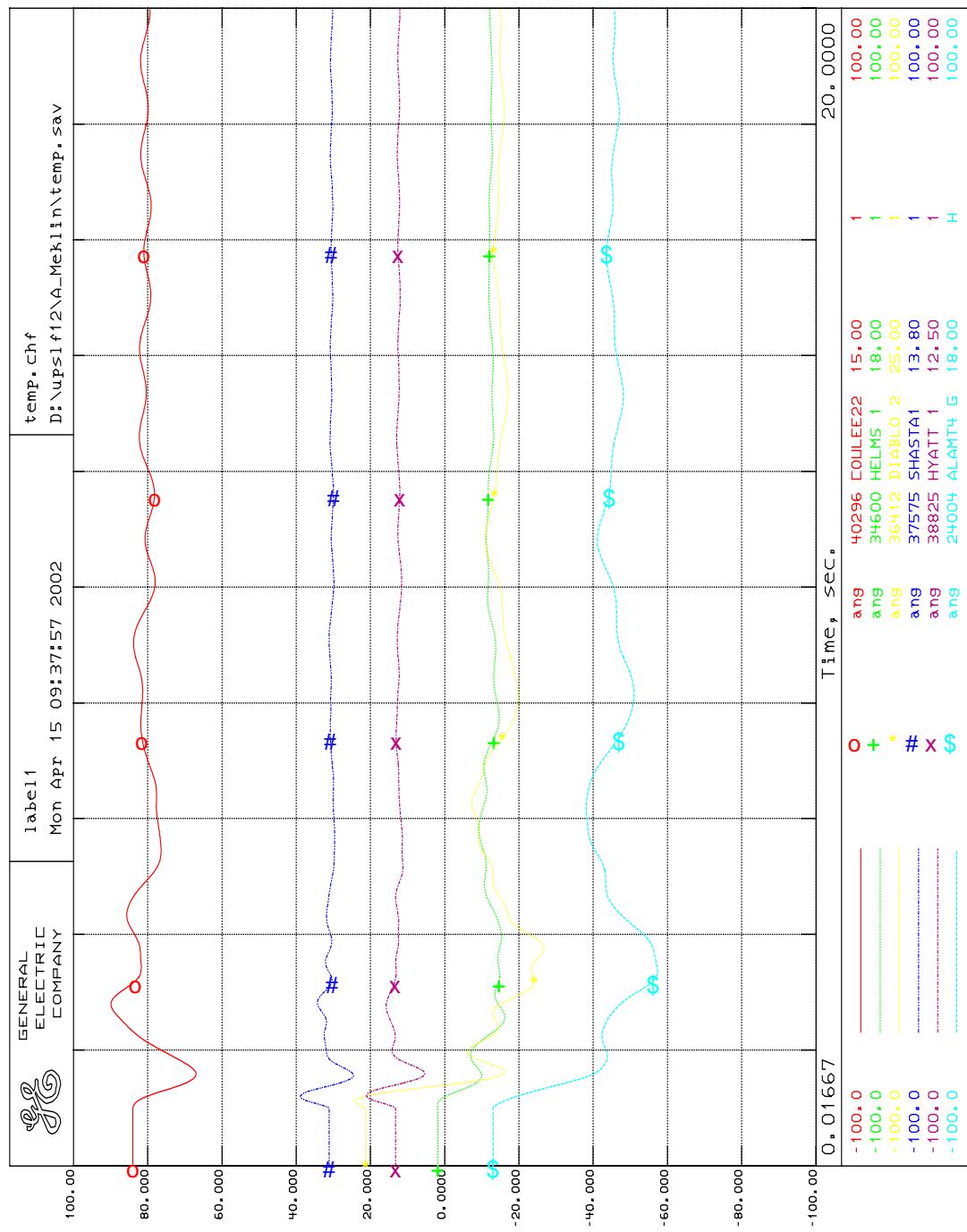


Figure 8 . Los Banos – Gates and Los Banos – Midway DLO. No RAS.
Pre-project. Angles.

Pre-project, N-to-S, P15=1750, P26=3085
DLO: Los Banos - Gates & Los Banos Midway, NO RAS

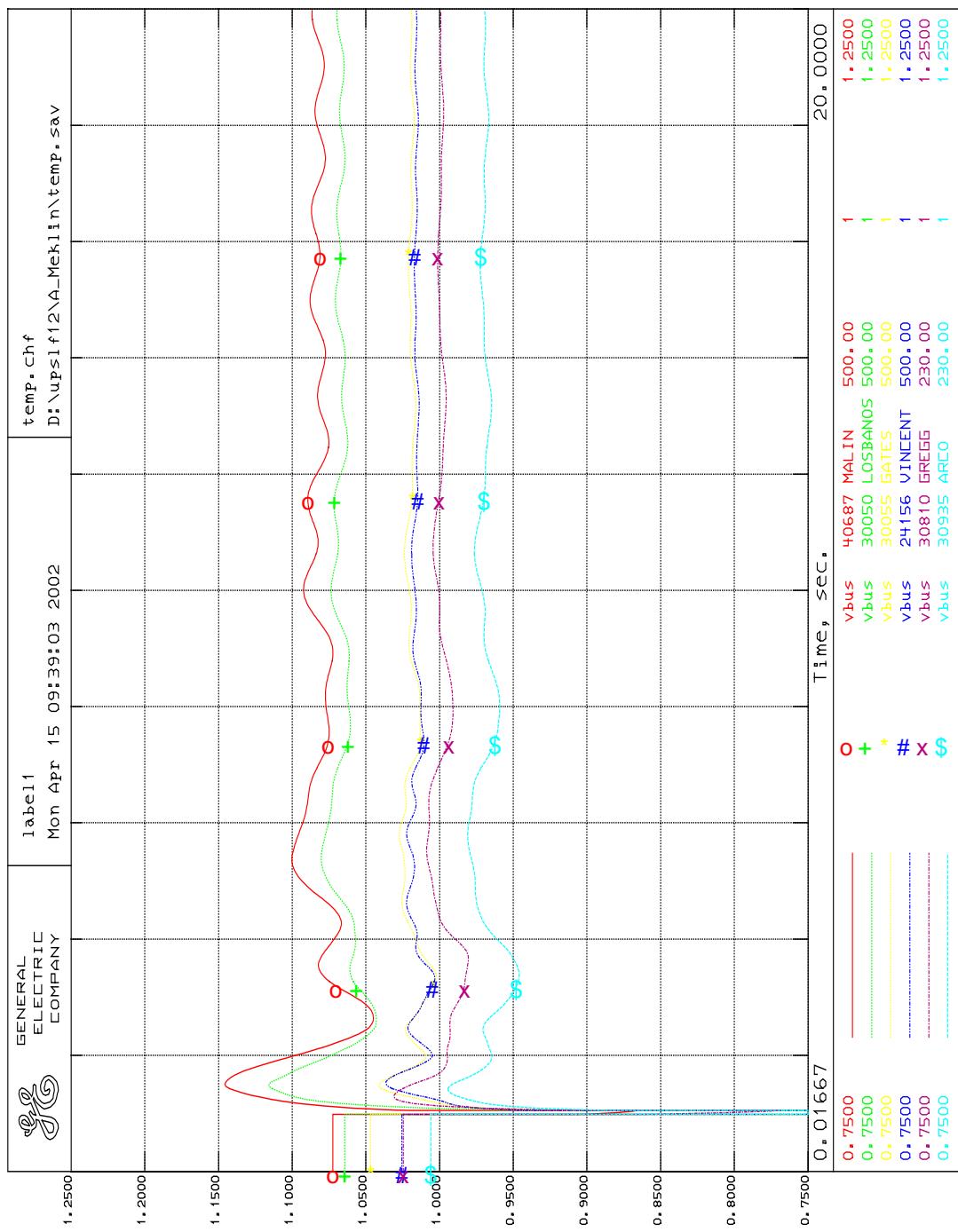


Figure 9. Los Banos – Gates and Los Banos – Midway DLO. No RAS.
Pre-project. Voltages.

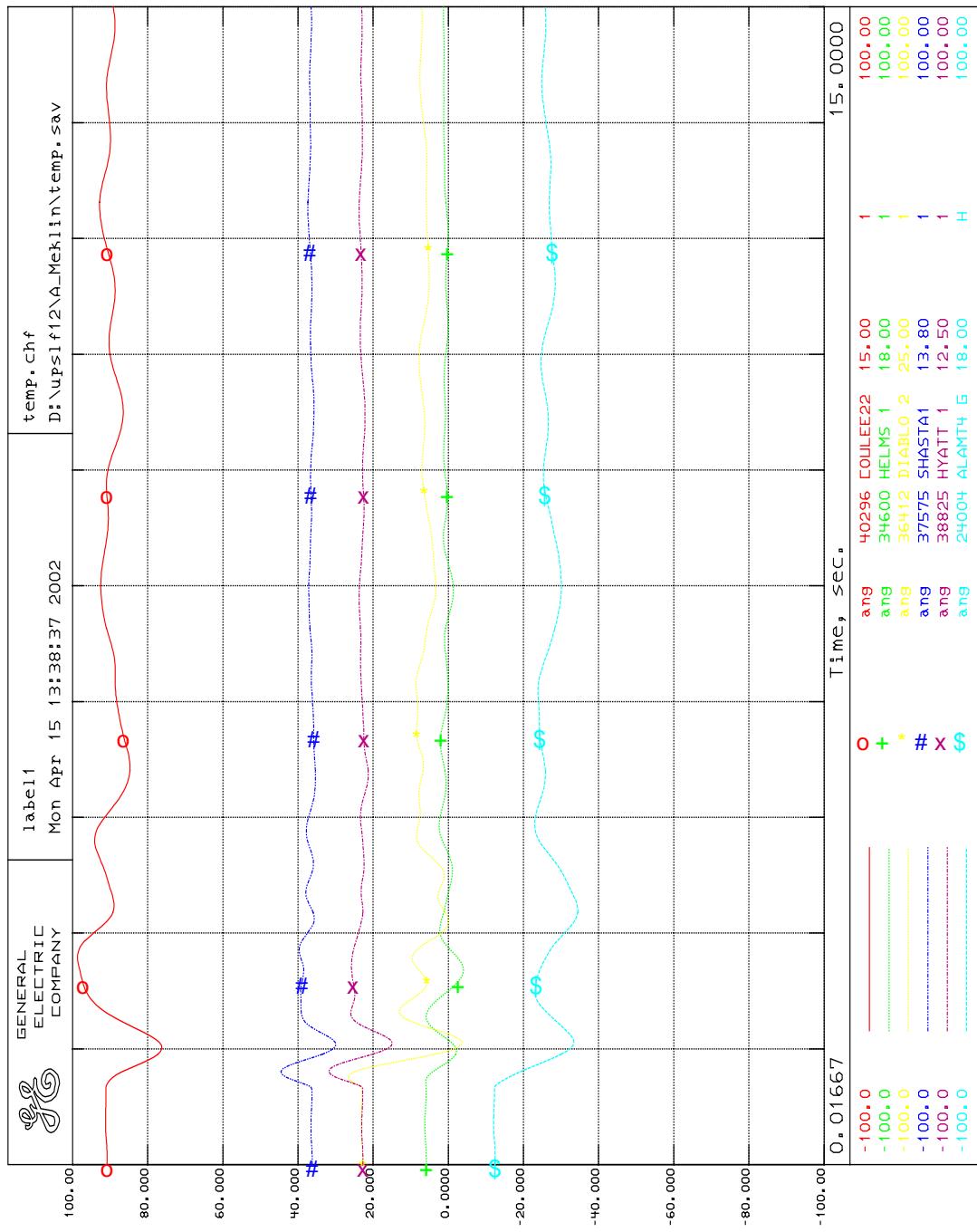
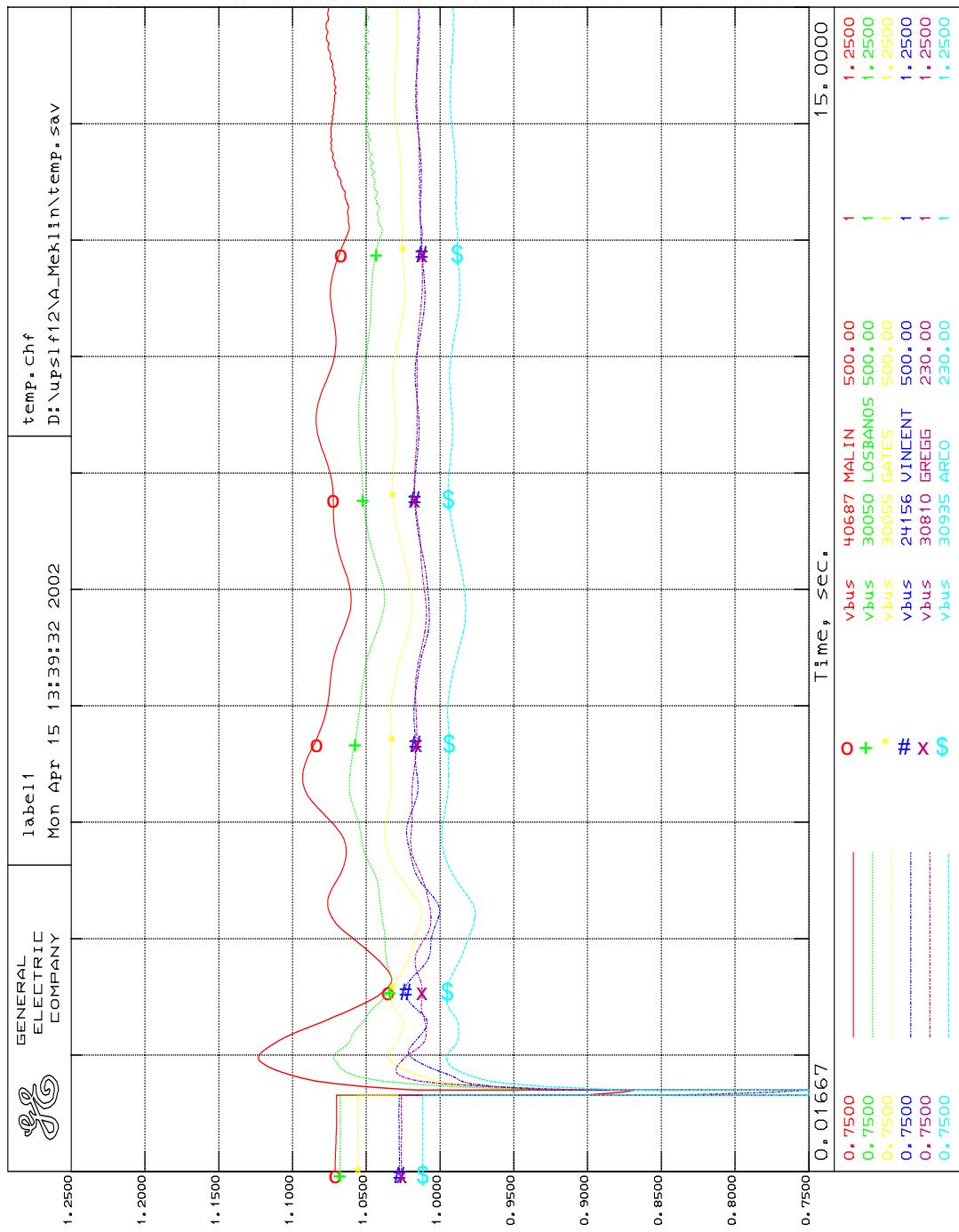


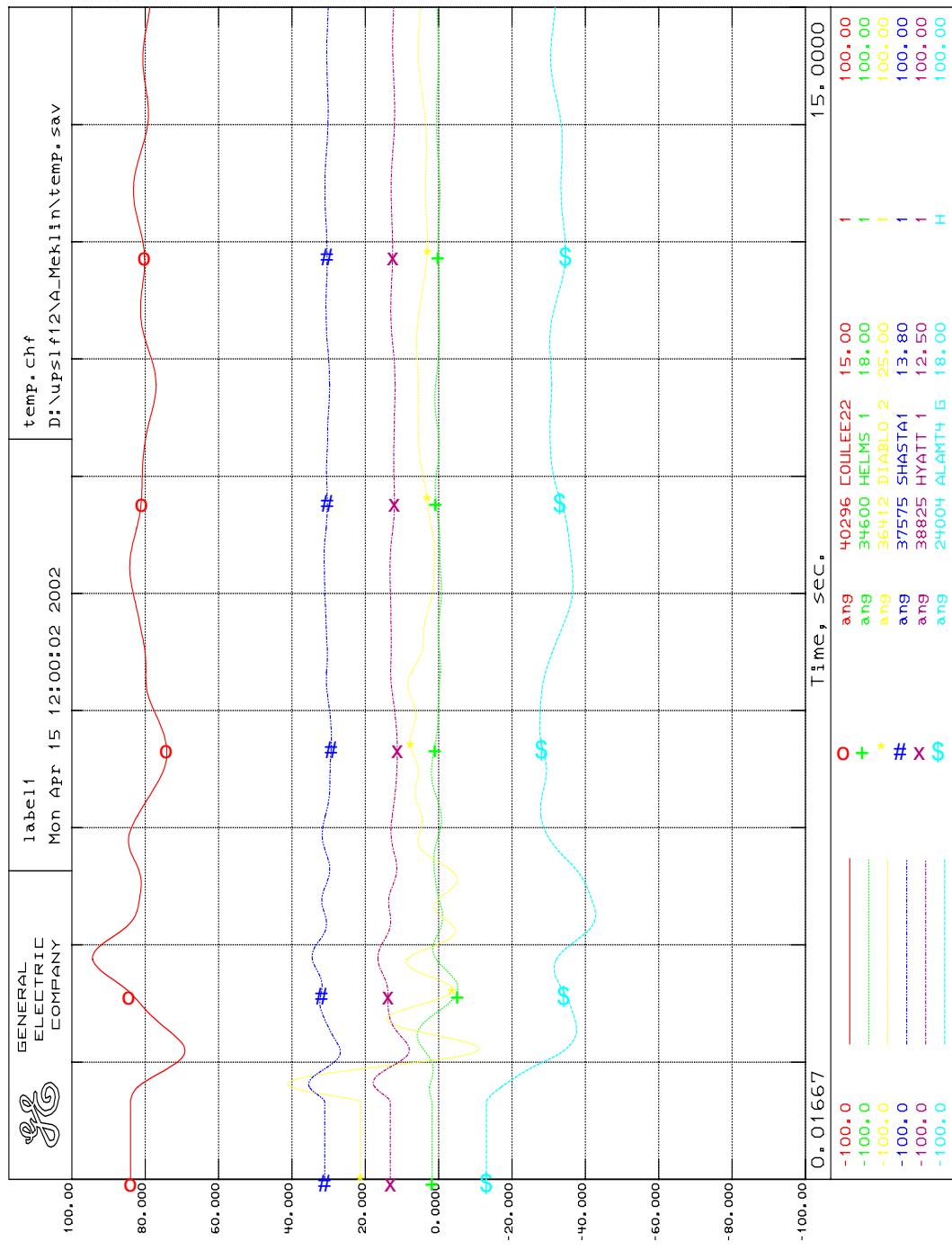
Figure 10. Los Banos – Gates and Los Banos – Midway DLO. No RAS.
Post-project. Angles.

Post-Project, N-to-S, P15=2710, P26=3985
DLO LB-Midway & LB-Gatesy, fault on LB 500 kV, No RAS



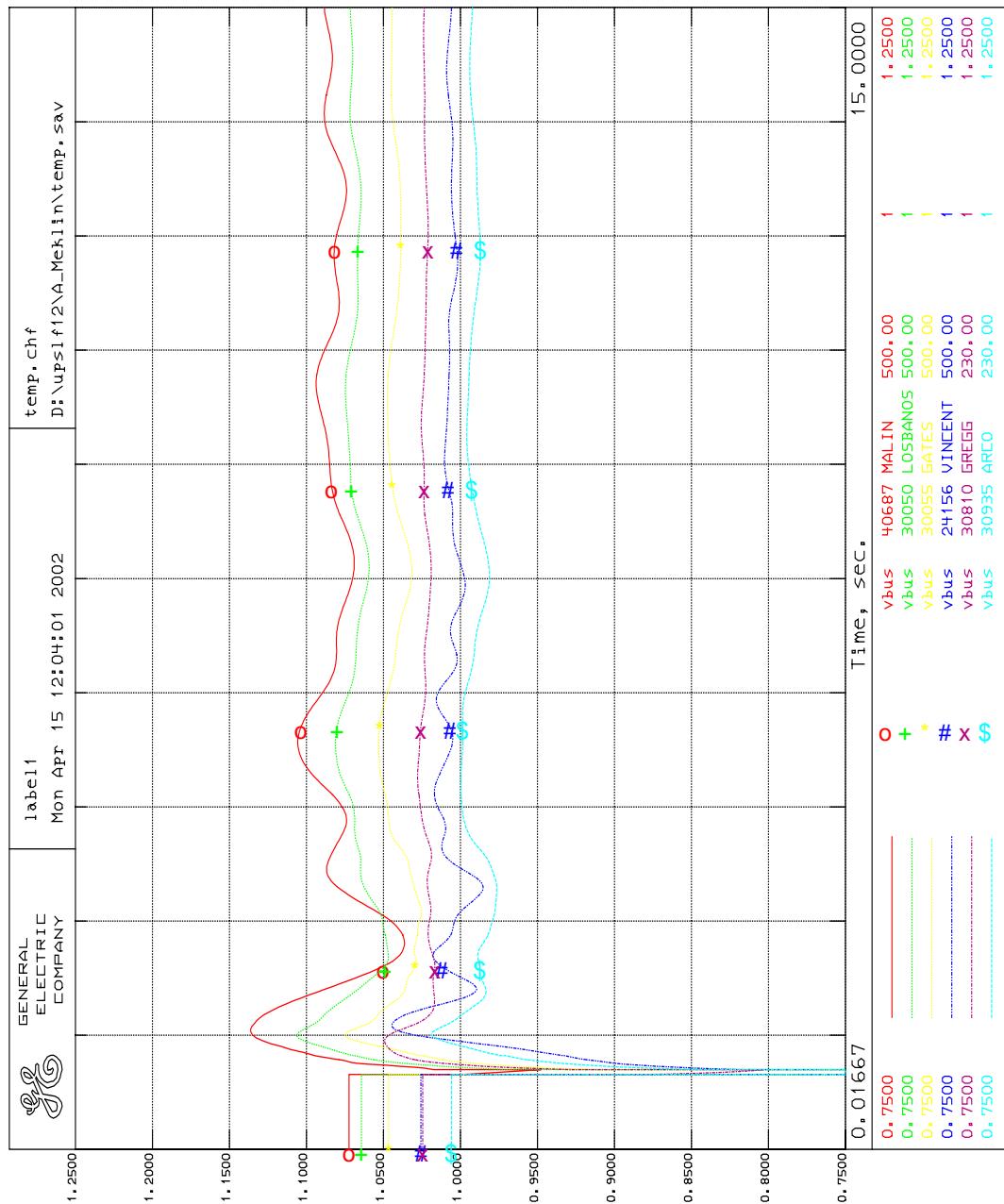
Post-project, N-to-S, P15=2710, P26=3985
DLO LB-Midway & LB-Gatesy, fault on LB 500 kV, No RAS

Figure 11. Los Banos – Gates and Los Banos – Midway DLO. No RAS.
Post-project. Voltages.



Pre-project, N-to-S, P15=1750, P26=3985
DLO LB-Midway & Gates-Midway, fault on Midway 500 kV
RAS: 216 MW load trip

Figure 12. Los Banos – Midway and Gates – Midway DLO. No RAS
Pre-project. Angles.



Pre-project, N-to-S, P15=1750, P26=3985
DLO LB-Midway & Gates-Midway, fault on Midway 500 kV
RAS: 216 MW load trip

Figure 13. Los Banos – Midway and Gates – Midway DLO. No RAS
Pre-project. Angles.

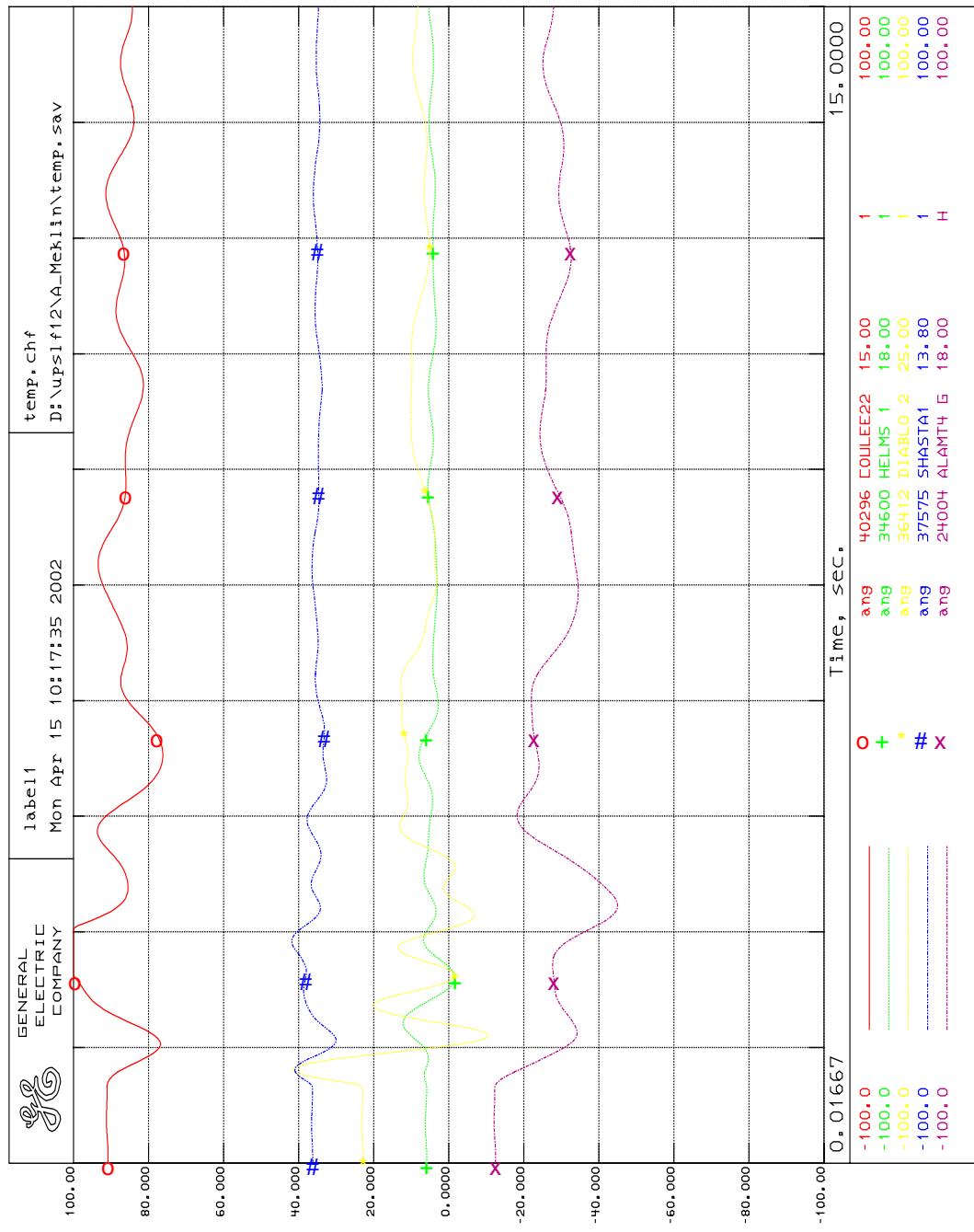


Figure 14. Los Banos – Midway and Gates – Midway DLO.
 RAS: 1050 MW of N.C. Hydro gen. trip and 216 MW load trip.
 Post-project. Angles.

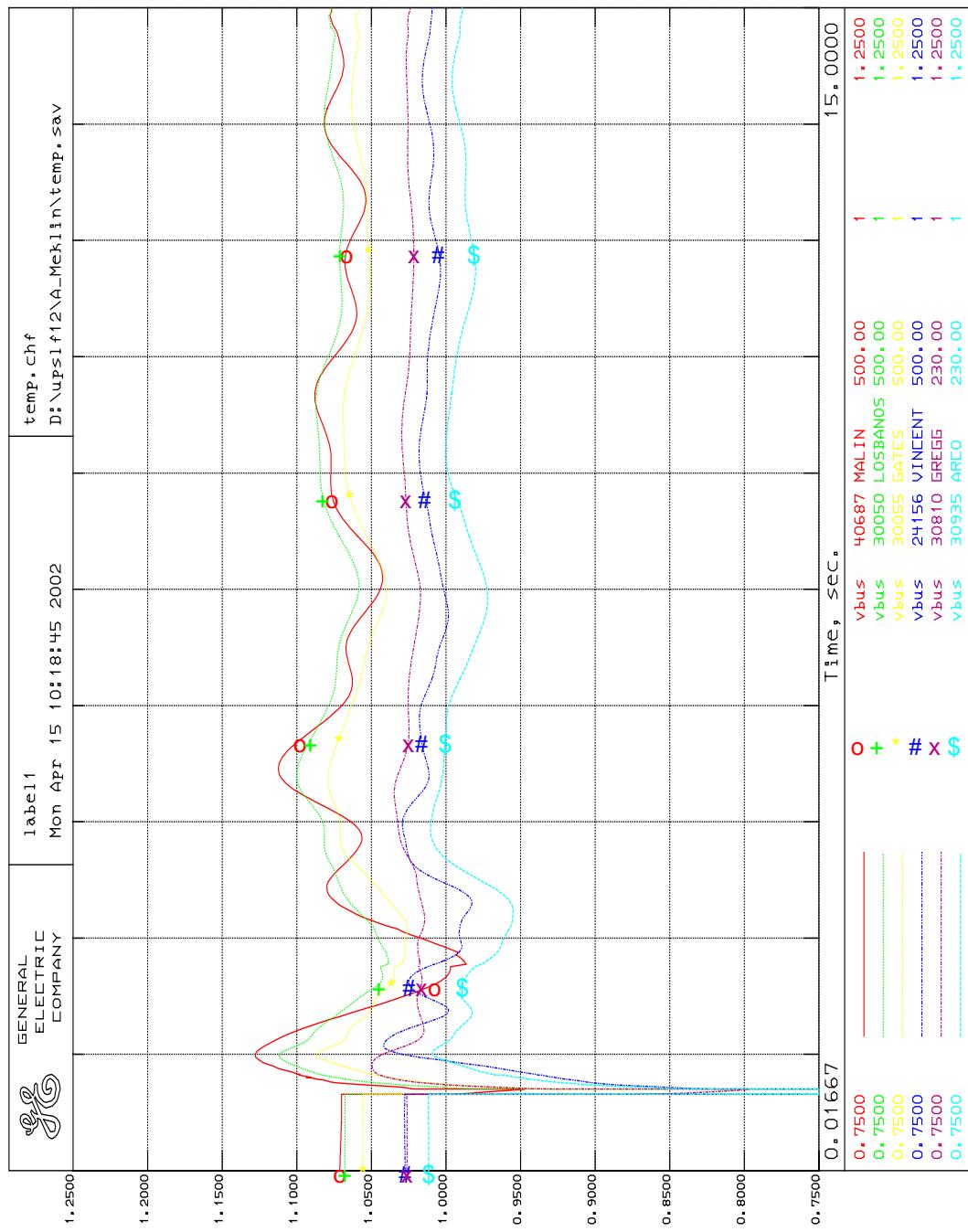


Figure 15. Los Banos – Midway and Gates – Midway DLO.

RAS: 1050 MW of N.C. Hydro gen. trip and 216 MW load trip.

Post-project. Angles.

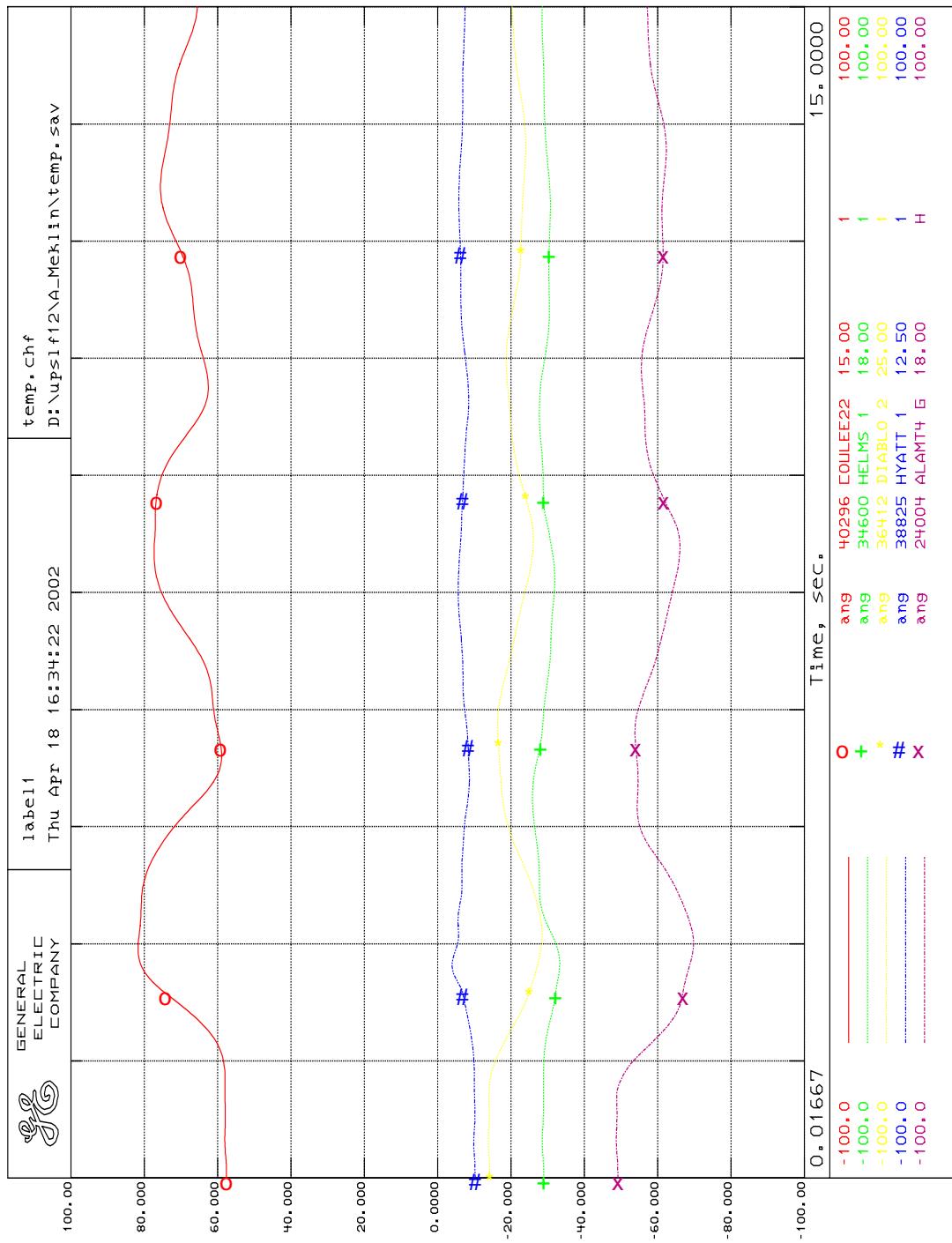


Figure 16. Palo Verde DLO. Post-project. Angles. 3265 MW on P15.

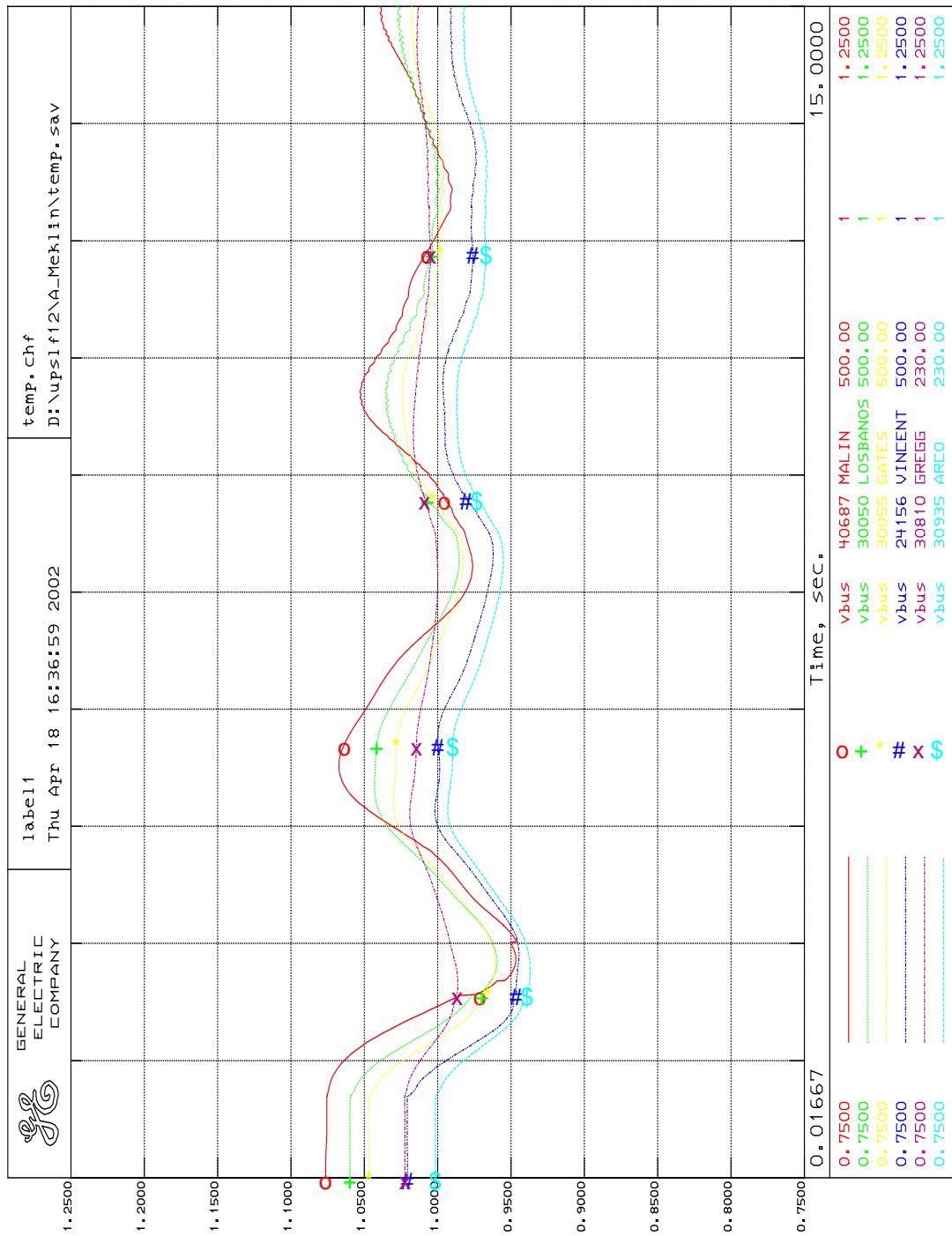


Figure 17. Palo Verde DLO. Post-project. Voltages. 3265 MW on P15.